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ABSTRACT

This guide was developed to help students learn how to study. Suggestions are given for when to study, where to study, what to study, and how to study. The need to understand assignments and to turn in homework assignments on time is emphasized. Use of the library is explained, and suggestions for taking and using good notes are given. Ways to prepare for tests are discussed and test-taking procedures are described. Techniques for answering essay questions are included. Critical thinking is explained and ways to evaluate information are discussed. A list of questions to help students decide how much credence to give to something they have heard or read is provided. The final section of the guide is concerned with fallacies. Different types of fallacies are illustrated to help students recognize them. The fallacies discussed are divided into two groups: fallacies of relevance, which are characterized by a lack of relevance between conclusions and the reasons given in support of those conclusions; and fallacies of ambiguity, which are characterized by vagueness or lack of precision or reference. Several examples of both types of fallacies are provided. (NRB)

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TEACHING YOURSELF:
A GUIDE TO BETTER STUDY SKILLS AND HABITS

by

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TEACHING YOURSELF: A GUIDE TO BETTER STUDY SKILLS AND HABITS

Why Study

Human infants are born into the world totally dependent upon others for their survival. As they mature, they gradually learn more and more about the world, and about themselves as part of the world. As they learn more, they become less dependent upon others, and they need less control from others. Becoming mature and being able to take control of your own life is not only a process of getting older: it is also a matter of learning. At first even your learning is controlled by others--by your family, playmates, teachers, and so forth. But if you are ever to become a mature, independent member of society, you must at some point begin to assume responsibility for your own learning. You must learn how to teach yourself all the things you will need and want to know throughout your life. In short, you will need to learn how to study. Accepting responsibility for your own learning is one of the most important steps you can take along the road to becoming a mature person. It will affect not only the kind of work you will do, but the kind of person you will be. The great psychologist, William James, once observed that, "There is very little difference between one man and another, but what little difference there is is very important." The difference that James had in mind was that which allows you to become a distinct, individual person--your mind. It is through learning, that you most fully realize your strictly human potential and your own individuality. So, if you take yourself seriously, take your studies seriously as well. This little pamphlet is intended to help to help you get started.

When to Study

The following are some things to consider in deciding when to study.

1. Study regularly. Reserve a block of time each day for study, and stick to it. A shorter period of daily study is more effective than a marathon session once a week or just before exams. Even if you sometimes have no particular lesson assignments, use your dedicated study time for review, reading ahead in your textbooks, or just reading a news magazine or a novel. The point is to make study a regular part of your life, and not to break the habit once you have established it.

2. Review frequently. A daily review of the preceding

days work will help to transfer what you have learned to your long-term memory. Then set aside an hour or two each weekend to review what you have covered in each course during the preceding week. If you have done the daily study regularly, the weekly review should not take long.

3. Choose a time when you are fresh and alert. Allow yourself periodic breaks for snacks or a moment's rest during your study period. A series of twenty to thirty minute sessions with five minute breaks between them will probably be more effective than much longer sessions.

4. Choose a time when the house is relatively quiet and when there is less competition for your attention. Let your family and friends know that, during this time, you are not available for telephone calls, chores, meals, and so forth. If you decide to study after school, allow yourself at least a short break before beginning your study period.

5. Plan around foreseeable activities such as favorite TV programs, dates, school activities, family needs, and so forth. Buy or make yourself a pocket calendar for noting important events such as test dates and due-dates for term papers. When conflicts occur, ask yourself which activity has the most lasting consequences for your life.

6. Don't postpone work on long-range assignments such as term-papers and book reports. Break these into a series of short term goals, e.g., preparing the bibliography, reading and taking notes, outlining your report, preparing the first draft, etc. By pacing your work in this manner you won't be overwhelmed with a mountain of work all at one time. If you plan your time carefully, and take care of business first, you may find that you have more free time for yourself. At least, the time you do have will be free of dread, guilt, and hassle.

7. Hold yourself to your schedule. Don't procrastinate; don't fudge on your study time; and don't depend upon inspiration. You are in control of your affairs, so you can act according to what you know is right rather than merely depending upon your impulses and feelings.

Where to Study

The following are a few things to consider in choosing a place to study.

1. Find a place that is readily accessible to you and which is out of the way of other people so that you won't be disturbed or interrupted.

2. Eliminate distractions such as radio, TV, stereo, telephone, etc., from your study area. The ability to concentrate your attention and thoughts on your studies is of

absolutely vital importance? Focusing your thoughts and attention can be difficult enough without having to contend with competition from outside sources. Some students claim that background music actually helps them to study. But as a simple matter of logic, if you pay any attention to the music, you obviously aren't giving your undivided attention to the task at hand; and if you pay no attention to the music, there's no point in having it on. So, save the music for a time when you can give it the attention it deserves.

3. Make your study place comfortable, but perhaps not too comfortable. When your body sags, your mind is apt to sag also. If you slouch or lie down, you may become drowsy or easily distracted. But if you are uncomfortable, that in itself will be a distraction.

4. Keep your study area neat and uncluttered. The condition of your surroundings may reflect the condition of the mind which created them. If your study area is clean and well-organized, you will feel better about being there.

5. Keep necessary study aids and supplies handy, e.g., pencils, paper, a dictionary, a thesaurus, a calculator, and so forth.

5. Make sure the area is adequately lighted. Poor lighting will cause you to get tired more easily, and it might harm your eyes. Also make sure that the area is well-ventilated and neither too warm nor too cool. All of these can affect your ability to stay alert and to concentrate on your studies.

What to Study

Curious and thoughtful people study anything that interests them or that significantly affects their lives. The fact that you are a student does not necessarily mean that your studies have to be limited to the subjects taught in school or to the assignments given you by a teacher. Indeed, in order to be a responsible adult in the modern world, you must be informed on a great variety of subjects and issues. But since this pamphlet deals primarily with secondary school students and their study habits, it is concerned basically with study skills and habits in the context of formal school education.

Certain subjects are required by the state and by the local school as conditions for graduation. Other courses are necessary for advanced academic or occupational education. These kinds of considerations may affect the relative priority which you assign to different subjects in allotting study time. However this might be in your case, people who take themselves seriously always try to do the

best job they can in whatever they do. The quality of the work you do says a lot about the kind of person you are. So whatever subject you are studying, give it your best effort under the existing circumstances of available time and resources.

What are those resources? Generally they will be such things as your textbooks, class notes, completed assignments and test papers, and the materials available in your local libraries. Your teachers, parents, and friends might also be regarded as resources to assist you in your studies. A usual cycle of study might include a reading assignment from your textbook or from library materials; a class lecture or exercise on the subject; and a homework assignment. Being aware of the usual pattern of instruction of your different teachers can help you to anticipate the volume as well as the direction that your studies will take. In most cases, your study will be based on textbooks, class notes, and library materials.

How to Study

Here are a large number of very practical suggestions which many people have found helpful in improving their study habits and learning.

1. Pay attention and concentrate on your studies. Again, the ability to concentrate your attention and thoughts on your work is of utmost importance. Learning to pay attention is more like acquiring a habit than like learning a new fact. It's more like learning to brush your teeth regularly than like learning the dates of the Civil War. Just knowing that you should brush your teeth to keep them healthy is helpful, but establishing the habit of actually brushing them each night and morning usually involves patient repetition and frequent reminders over time. Then, pretty soon, it becomes automatic. With little children these "patient reminders" come from their parents. But as you grow older, you have to become the parent to your own "inner child." With the same patient persistence and understanding of a good parent teaching a child to brush his or her teeth every day, you can train yourself to concentrate your attention on the task at hand. This is as true of mental habits as it is of physical ones. If you are reading a book and you suddenly realize that your mind has wandered away, simply force yourself to go back to the last part you remember reading, and start over. Do this without blaming yourself, and do it over and over, no matter how long it takes. If you do this consistently and firmly, you will find, as with housebreaking a kitten, there will be fewer and fewer "accidents" until the job is accomplished.

Here are some tips to help you concentrate your attention on your studies. Get to class on time. Sit near the

front of the room away from talkers, cut-ups, and trouble-makers. Keep your eyes on the teacher. Participate actively in the class. Listen closely to what the teacher says--as though afterwards you had to explain the teacher's remarks to the class. Try to follow the ideas as well as the words of the teacher. Ask questions when you first realize that you don't understand something. Raise your hand to answer questions asked by the teacher. If necessary, go back after class for further clarification. These kinds of things will help to keep you mentally, as well as physically, involved in the class. They will also demonstrate to the teacher that you take the class seriously, and that has its advantages, too.

Students sometimes have trouble concentrating on their subjects because they don't find them interesting. And they don't find their subjects interesting because they don't pursue them to the depth where the subjects really are interesting. In fairness to these students, it must be admitted that many of them have been brought up according to what might be called the Mary Poppins theory of education: they have been led to believe that study and learning are like medicine which can only be made palatable by administering it along with a "spoonful of sugar." Unfortunately, this practice tends to trivialize the subject, to rob it of intrinsic interest, and to transfer the student's interest to the sugar-coating. The student then must rediscover for himself that learning isn't like medicine at all, and that it can be extremely interesting by itself, especially after the student gets beyond the very basic, introductory aspects of the subject.

In this respect, studying is something like swimming: you have to venture beyond the wading pool into the deeper water before swimming really becomes fun. Similarly, the study of many subjects only becomes interesting after you've spent a little time getting past the basics. And this, of course, takes will-power and patience. Those who jump in over their heads before they are ready also tend to get discouraged and to lose interest. So start with the very basic, introductory material and learn it well, but don't stop there. Work your way as quickly as possible into the more advanced and interesting aspects of the subject, even if you have to go beyond your school textbooks. That's what the library is for. And cultivate the company of people who are interested in learning and talking about the subjects that concern you. Most of all, don't be afraid to really push yourself, to come to grips with a subject and struggle with it over an extended period of time. For an adult, playing cards with a child is not very interesting because the game holds no challenge. But with an opponent who can challenge your skills, card games can be intensely interesting. That's how it is with studying. If the subject matter is too basic or too simple, it may not hold your interest and you may have trouble concentrating on it. And finally, a mature person

does not require that everything he does be amusing, entertaining, or even interesting. Mature people accept the fact that they often must do things simply because doing them is important. Refusing to accept this kind of responsibility is simply refusing to grow up.

2. Make sure that you understand assignments. Write them down. A preprinted form for recording assignments may be helpful. Follow instructions carefully and pay attention to details.

3. Read all reading assignments. They may help a great deal in further understanding what was said in class, and they may contain new material.

4. Turn in all homework assignments on time. Make sure that your work looks neat. Take pride in your work as it reflects on the kind of student you are. Just following the four rules given so far can make a dramatic improvement in your grades, your self-confidence, your self-respect, and your attitude toward school.

5. Use the library. Many people either continually starve their minds of information or feed them a steady diet of the garbage of the information world, i.e., rumors, hearsay, uninformed opinion, propaganda, sensationalism, superstition, and so forth. This is all the more tragic in view of the easy availability of accurate, reliable information in most parts of this country. Almost every secondary school has a library, and almost every town of any size has a public library. And no matter how small these may be, they have access to the collections of the largest libraries in America. As a result of this network of libraries, virtually any information that has been published in the world is available to you. No skill you could learn is of more basic and lasting value than those involved in using the resources of the library. And no habit is more rewarding throughout your life than using the library to keep yourself informed on matters that affect your life. You can find information on any subject presented at a level that you can understand, and you can read and study it at your own pace. If you need help in finding something, librarians take a lot of pride in offering help in ways that don't violate your right to privacy or pass judgement on your interests and tastes.

6. Don't worry about not being as "smart" as someone else. Most students, regardless of how smart they are, don't begin to use the mental abilities they have. Students of average ability who are serious about their school work and who are careful, deliberate, thorough, and persistent in their efforts often perform better in school and in life than do students of above average ability who lack these character traits. Use what you have to its fullest, and you won't have to worry about how smart anyone is.

7. Don't be afraid of making mistakes. A mistake is a golden opportunity to learn. Learning the correct answer to a question or problem consists in large part of learning which of the plausible answers are incorrect.

8. Take good notes--and use them. Just the act of taking notes is helpful. It requires you to pay attention; and in writing the information on your note paper, you are also writing it down in your memory. You can put this bit of psychology to work for you even further by consolidating and organizing your notes later on during your regular study period. Review and repetition helps to transfer information from your short-term to your long-term memory. By drawing together notes on related material, clarifying and expanding these while your memory is still fresh, relating them to what you already know, placing them in logical order, and writing them down, you fix them permanently in your understanding and in your memory. Talking about what you have learned with your family, friends, or a study partner can also help you to remember. In compiling your notes, it is sometimes helpful to paraphrase ideas, using your own language. In doing so, however, don't underestimate the importance of learning the new terminology of the subject you're studying. The special language of a subject often carries the key ideas and concepts of that subject.

a. Use a separate notebook for each class. Date each page of notes. Leave a wide margin on one side of your page, or leave alternate pages blank. This extra space can be used later in adding related information from your textbook or from library reference works.

b. Use abbreviations, shorthand expressions, memory-jogging phrases, etc. If you try to write out everything the teacher says, you will quickly fall behind and get discouraged. Pick out the most important points and note them, using such abbreviations as: e.g., for example; i.e., that is; w, with; w/o, without. (U cn wrk out mny addtl xmpls of ur own.) Through practice this will become second-nature.

c. Note all new words and expressions and their meanings. Learn to use the "language of the subject" and you will have learned the subject itself. Look for opportunities to actually use the new words yourself. After two or three such uses, the language will be yours forever.

d. Ask yourself: If I were writing a test of this material, what questions would I include? These will be important points to include in your notes. Note also points repeated or stressed by the teacher.

e. Most teachers as well as books, magazine articles, TV programs, etc., present their information

in some kind of definite, carefully thought out pattern. Look for this pattern and it may help you to understand the subject and to make an outline of it in your notebook. Outlining involves grouping similar and related materials together in the same and related categories and sequencing these categories in such a way as to show the relationships between them. Outlining is a good way to get the overall "big picture" of the subject. When you have this kind of an overview of the subject, the specifics will make more sense, because their relationships with other specifics and with the whole subject will be more obvious. Understanding how a carburetor works, for example, is much easier if you know generally how an internal combustion engine works.

f. Indicate in your notebook those ideas which the teacher emphasized or spent a lot of time on. They may be keys to understanding the subject under study, and they are good candidates for test items.

g. Copy examples which the teacher puts on the chalkboard. Examples often summarize a lot of information and they are easier to understand and remember; and if the teacher thought an example important enough to write on the chalkboard, it may turn up later as an exam question.

h. In taking notes from written material, look for topic or summary sentences. These often occur at the beginning and end of paragraphs. It is often convenient to have your own copy of written material. With your own copies you can use highlighter felt-point markers to identify important sentences and passages. This is quicker than pausing to take notes, and it allows you to come back later and summarize what you read by referring to the highlighted passages.

i. Pay attention to charts, graphs, tables, illustrations, etc. in what you read. They often summarize a lot of information in a useful way and show interrelationships between different items of information.

9. Don't allow yourself to get behind. Falling behind the rest of the class can be demoralizing and frustrating. And trying to catch up by reading a large amount of new material just before an exam can be very difficult. If you get behind or just lost in a subject, go back to the beginning and retrace your progress until you find where you began to get stuck. Then try to narrow the problem down until you can say exactly what it is that you don't understand. Often it will be something as simple as not knowing the definition of a word, or needing an example or two of how something looks in actual practice. Arrange a conference with your teacher to get yourself back on track.

Sometimes it is a particular person's way of explaining an idea that fails to communicate. Ask a different person to explain it. Sometimes it is helpful to go to the library and get one or more introductory or children's books on the subject that is giving you trouble. These introductory books usually break a subject down into its very basic ideas and principles. Seeing how different writers break the subject down and explain the key ideas can sometimes be very helpful.

10. Think about what the teacher says and about what you have read. Don't just try to remember a lot of words. "Thinking" sometimes means picturing in your mind how something looks. But a "picture's" being a picture of something involves language. So "thinking" sometimes means something like "silently talking to yourself." Try talking to yourself about your studies. When you don't quite understand something, try to explain or clarify it to yourself just as though you were trying to explain it to someone else. This will at least help you to focus more precisely on the specific aspects of the matter that are giving you trouble. And that will make it much easier for you to ask someone for the help you need, or to look up the answers to specific questions in your text or other books. When you do understand a new idea, try to elaborate it or expand upon it to yourself--to see what implications it has, or what can be inferred from the new idea, fact, information, etc. To do this, ask yourself: So what? What difference does it make to anything? If this were true, what would things be like? If this were not true, what would things be like? What would be the difference between this being true and its being false? How could anyone know that this is true? If this is the case what consequences can be expected or predicted? What else would be affected? What change of any kind would result?

Ask yourself: What is this thing or event a part of? What are the parts of this thing or event? What kind of thing or event is this? What are the different kinds or types of this thing or event? Do these things really belong together in the same class or category? Remember that classes and categories are created for different purposes; and things that belong together for one purpose may not belong together in a category that was created for a different purpose. Walter Cronkite, Mother Teresa, Eudora Welty, a cockroach, and an oak tree all belong together in the category of living things, but not in the categories of animals, mammals, human beings, or great Americans. Thinking about a subject or topic often begins with this kind of careful observation and analysis of the topic into its separate parts and the relationships between those parts.

In thinking about what you hear and read, other questions that you might ask yourself--or other people--are: What were the causes of this? What assumptions is the speaker or writer relying on in making this claim? What

reasons are given in support of what is claimed? What are some examples of this? What would this look like in actual practice? How is this phenomenon or event like others that I know about? How is it different? What was going on in the world at the same time this was happening? Who were the contemporaries of this person, and who or what was influenced in what way by him or her? What was changed by this person or event?

Ask yourself: How would I go about teaching this idea or concept to another person? In answering this question you will be teaching yourself the concept. Studying and teaching oneself are basically the same thing. If you learn how to study effectively, you will learn not only the subject you are studying, but something even more important: you will learn how to teach yourself the things you will need to know throughout your life in order to be a responsible, fulfilled adult.

In answering these and similar questions you will get ideas and insights of your own. Jot these down in the margin of your notebook. Later, if you are asked to explain and discuss the subject, your own ideas and insights will constitute part of that "discussion."

11. Relate what you learn in one class with what you learn in others. For example, does your study of the Romantic Period in American history help to explain some of the things you learn about romantic literature?

12. Read a lot. Reading regularly will help you to stay informed on a wide variety of topics. It will stimulate your own ideas. And it will improve the quality of your writing. Many professional writers say that they learned to write by reading the works of others. Remember that your school work is often graded as much on the basis of how well you express what you know as it is on the basis of the content of what you write and say.

13. Eat properly and get plenty of physical exercise and rest. Set yourself a reasonable time to be in bed, and stick to it. You can't abuse your body and expect that your mind will not be affected by it.

HOW TO TAKE TESTS

Like it or not, taking tests is a necessary and important part of being a good student. Test results often have a greater influence on final grades than do daily assignments. Treating tests seriously, therefore, makes good sense. The following are a few simple tips for improving your performance on tests.

1. Prepare yourself ahead of time for tests. Regular

study during the course leading up to the test is the best possible kind of preparation. If this is done, a short review of your notes, daily work, handouts, and quizzes should be all you need to prepare for the exam. Some students find it especially helpful to get together with a friend and to quiz each other on the material to be covered by the test. A good night's sleep and a hearty breakfast the next morning will then be more helpful than a frantic orgy of last minute cramming for the test.

2. Approach the test in a calm, deliberate, and business-like manner. When you reach the testing room, the time for anxiety is long past. Ready or not, you will have to do the best you can, and anxiety only gets in the way. Work steadily, but don't rush. You have plenty of time. Don't worry about how quickly some of your classmates seem to be working. If you feel yourself getting anxious, take a couple of deep breaths and exhale slowly. You'll find that helps to control the tension. Even if you are not as well-prepared as you would like to be, you will do better on the test by remaining calm, alert, attentive, and careful.

3. Essay questions usually carry more points than do objective questions, so make sure that you understand exactly what you are expected to do. For example, "Compare and contrast . . ." does not mean the same thing as "Describe and discuss . . ." or "Define and give examples of . . ." Read the essay question very carefully; underline the important words; and do exactly as you are told. If the test item tells you to compare and contrast something, your response should contain at least two parts: a discussion of similarities, and a discussion of differences. Essay questions are intended to assess your ability to organize and present information as well as your knowledge of a subject; so don't forget to use your best writing skills.

4. Thumb through the entire test to get an idea of its length, the amount of time required, and which parts carry the most points. Allocate your time accordingly.

5. Make sure you understand how the test is scored. If you are penalized for guessing, you may be better off to skip those items about which you are uncertain.

6. Answer the easy questions first, checking those about which you are uncertain. Later you can come back to the checked questions and spend more time on them.

7. Try to understand the intent of the questions. Be careful about reading interpretations and qualifications into them.

8. Try to answer multiple-choice questions before reading the possible answers given on the test. Then look for the choice which best matches your own answer.

9. Consider all of the answer options provided before making a choice. Eliminate the obviously incorrect responses and focus your attention on the real possibilities. When several options look like good answers, compare them to determine exactly what makes them different. That difference should help you to choose one over the other.

10. When responding to essay questions, jot down the major points of your response on a sheet of scratch paper or in the test margin, then develop your response around those points. Even if you lack the time to complete the response, the test grader can see the points that you intended to address.

11. If you have time left over, don't hand your test in early. Instead, use the extra time to double check your answers, especially your answers to the more difficult questions.

HOW TO EVALUATE INFORMATION

A credulous person is one who easily accepts and believes almost anything anyone tells him or her. A gullible person is easily tricked or deceived, often because he or she is credulous. A superstitious person is one who believes improbable, illogical, and outlandish tales and explanations, in part because he or she is gullible, and in part because he or she enjoys being titillated and amazed by the mysterious, magical, and sensational. Such people are usually ignorant or, which amounts to the same thing, extremely uncritical of the information they come by. They make no distinctions between fact and opinion, speculation, conjecture, and hearsay; or between truth and propaganda, dogma, sensationalism, and superstition. Such people are intellectually immature. They are the natural prey of unethical politicians, advertisers, cultists, confidence men, and other types of mind seducers. A decent respect for truth and honesty commits educated people to basing their beliefs on evidence, reasons, and arguments; to rejecting, or reserving judgment on claims that are inadequately supported; and to reevaluating their views in the light of new or stronger evidence and arguments.

A very large part of what we mean by an educated person is one who is reliably informed on matters of public and personal interest and importance. Such a person is able to separate his or her intellectual understanding of how the world actually is from emotional and imaginary versions of how he or she would like it to be. One doesn't become reliably informed by accident. Nor does information and knowledge simply grow and blossom in the mind naturally. It has to be actively sought out and carefully evaluated. Because an educated person always tries to base judgments and

values upon good reasons, solid evidence, and relevant facts, he or or she is always critical of what is offered under the label of information and knowledge.

Being critical, of course, does not mean being a nit-picker or fault-finder; nor does it mean being negative or rude. Being critical is not inconsistent with being open-minded and interested in new ideas and new discoveries. Being critical simply means that when someone offers a statement, assertion, or claim as fact or truth, you have a right to ask for the reasons, evidence, grounds, or other justification behind that statement or assertion. Being critical means only that you are not naive, credulous, or superstitious: it does not mean that you always begin with the assumption that others are wrong or malicious. Obviously, you don't have to be offensive to those who try to impose their unsupported views upon you, though occasionally that is the most efficient way of discouraging an outright snake-oil peddler.

The following are a few questions to which you might seek answers when you are trying to decide how much credence to give to something you have heard or read.

1. Who is the author or source of the claim being made? What special study, training, or experience does he or she bring to the subject? What organizations, movements, causes, etc., is the author affiliated or associated with? Information on the writer may be available in such reference works as the Dictionary of American Biography, Dictionary of National Biography, Webster's Biographical Dictionary, Current Biography Index. Other sources may be found by consulting Biographical Dictionaries Master Index.

2. Who is the publisher or sponsor of the work or presentation, and what is his reputation? For example, the National Enquirer has a different reputation for accuracy and fairness than does the New York Times. And even when accuracy is not at issue, different publications sometimes have different biases or points-of-view on certain subjects. Time and Newsweek, for example, often cover much of the same subject matter, but Time is likely to present it with a more conservative interpretation than does Newsweek. Knowing the editorial slant of the publisher can be important when deciding about the relative significance of a particular account or argument. Such publications as Magazines for Libraries may be helpful in this respect.

3. Are the sources of quotations, studies, facts, and statistics offered in support of the argument adequately identified? Is the supporting data relevant to the point being argued? Is the supporting data reasonably timely?

4. What is the apparent main purpose of the publication

or presentation? Is it to provide information, to sell something, to get votes, or to attract converts? Does the author present a reasoned argument for his case based upon demonstrable facts, solid evidence, or other good justification? Does the author present all sides of the issues fairly? Does he present counter-arguments in their strongest forms and refute them convincingly? Or does he appeal primarily to your emotions, prejudices, and loyalties?

5. What have other authorities said or written on the subject? Except for matters of personal taste and preference, more than one interpretation or point-of-view is usually possible, so it is a good idea to reserve judgment until you have heard more than one side of a story of argument.

If the presentation or publication that concerns you is in book form, find out what other readers have thought of it. For other evaluations of books consult Book Review Index, Book Review Digest, New York Times Index, Current Book Review Citations, and the indexes to special fields of study such as the Education Index and the Humanities Index.

6. When reading or listening to a presentation, ask yourself such questions as the following.

a. What kind of an issue is being discussed? Is it political, scientific, psychological, moral, aesthetic, semantic, administrative, religious, etc.? Are the reasons and evidence offered relevant to the claims being made about this issue? For example, is the writer or speaker trying to prove or disprove what is basically a scientific or empirical claim on the basis of inappropriate political, aesthetic, moral, or religious evidence?

b. What precisely is this person saying? Is he saying anything specific, or is he only speaking loosely or in broad or vague generalities? What, specifically, is being claimed that is questionable? False or debatable claims are sometimes woven into long and complex arguments like a weak thread in an otherwise sound piece of cloth. So you often have to tease an argument apart into its constituent parts to find its flawed elements. What sorts of things would count in favor of the claims being made? What kinds of things would count against them? How would you go about collecting the information or evidence needed to prove or disprove the claims being made?

c. If he is making a specific claim, what specific evidence or reasons does he give in support of that claim? Are his reasons and evidence any more believable than the conclusions he draws from them? Are there other, more plausible, interpretations or explanations of the evidence offered?

d. Has the writer or speaker considered all of the relevant evidence and arguments, or only that part which tends to support his position?

e. What assumptions, expressed or not, lie behind the claims being made? What would have to be the case in order for the claims offered to be true or believable?

f. Assuming that what is claimed were true, what would logically follow from it? What could reasonably be expected or predicted on the basis of that truth? What difference would it make? Has such a difference been demonstrated? Could it be demonstrated? What would be involved in demonstrating the difference?

g. Is there a different sense or context, or a different way of thinking about the questionable claims or assertions which would make them more meaningful? For example, legends are sometimes asserted to be factual when their real importance lies in their moral or artistic symbolism rather than their alleged historical accuracy.

h. Is the writer or speaker using words with their ordinary meanings, or is he specifying his own definitions for certain terms and thereby making his claims appear to be more believable? For example, psychological testers and surveyors sometimes claim that they are able to measure what is meant by such words as "intelligence" and "aptitude." Elaborate "instruments" such as the Stanford-Binet Intelligence Scale and the Scholastic Aptitude Test have been developed which some psychologists and educators claim provide measurements of intelligence and scholastic aptitude. The problem with such claims is that what the tests actually "measure" is what the tests themselves define as being intelligence and scholastic aptitude, not what intelligence and scholastic aptitude mean in ordinary speech. These terms are used with a rich variety of nuances in ordinary speech, some of which do not lend themselves to exhaustive, numerical definition. Thus, you have to accept the test-maker's definition of intelligence and aptitude before his arguments about the comparative degrees of intelligence and aptitude of different people even make sense.

A somewhat related problem with word meaning arises when certain words and expressions are used as slogans rather than as names for specific proposals, recommendations, or programs of action. Thus, debates about "merit pay," "open schools," "teaching children rather than subjects," etc., often go nowhere simply because such expressions are commonly used as battle-cries with little specific meaning. They mean what the

speaker or writer imagines them to mean at a given moment, and that imaginary meaning may shift even while the speaker or writer is speaking or writing, often without his even realizing that he has shifted his ground.

The problem with shifting meaning often takes another form called equivocation. This occurs when the same word or expression is used in different parts of the same argument with different meanings. For example, the scientist probing into the chemical changes in the cells of the retina, and measuring the speed of electrical impulses in the optic nerve, may be said to be studying visual perception in human beings. Such research is extremely valuable in its own right, but one makes a serious logical error if he concludes from these kinds of studies that science is gradually beginning to understand in biochemical terms what people mean when they speak about their perceptions of aesthetic, ethical, or religious qualities and phenomena. The point here is simply that the word "perception" is used in at least two different senses in these different cases. The scientist means one thing by "perception" when he's at work in his laboratory and quite another when he is at home talking to his wife concerning her perceptions of his lack of attentiveness to family business. The criteria used in the laboratory for deciding whether or not a perception has taken place are very different in kind from those used by ordinary people in the course of ordinary life. We don't usually, for example, have to refer to anything that goes on inside our heads to be certain that we are using the word "perception" correctly.

i. Is the speaker or writer thinking too narrowly about his or her subject, or thinking about it in the wrong terms? For example, people sometimes argue that only those students who expect to attend college should have to study such academic subjects as science and literature. This attitude is typified in the question of the student who asks her teacher, "why do I have to learn about photosynthesis and osmosis? I plan to be a beautician." Too often the answer to such questions goes something like this: "Oh, well, science pervades our lives. You will use science in everything you do." While such answers may be true in some sense, they really do not satisfy the question asked by the student. The student was thinking about the practical, applied relevance of the knowledge of basic biological processes to her expected work as a beautician. Her teacher tacitly accepted the terms in which the question was cast, but his response was rather lame and unconvincing, perhaps because the purpose of studying science in school is not primarily to improve employment opportunities or job performance. How might the teacher have responded

more convincingly? He might have tried to get the student to think of science study in broader terms. For example, he might have asked, "What will remain with you after you have forgotten the details of mitosis, osmosis, and photosynthesis? Will your view of the world and of nature be any different from what it was before you entered this class?" The teacher might then have tried to show the student that the world-view of people who are ignorant of science can't be significantly different from that of people in the Dark Ages. For them the world was a mysterious place of occult forces, indwelling spirits, and blind chance over which they had little or no control except by resort to magic and superstition. By contrast, the scientific world-view is one of order, natural law, and predictability within which human beings emerge as creatures of dignity and individual worth, and with a degree of control over their own destinies. By pointing out such things to the student, the teacher might succeed in showing her that she had asked her question in the wrong way--that she was thinking too narrowly about the purposes of studying science.

j. Is the speaker or writer assuming that there are only two viable sides to an argument, one of which is clearly right and the other wholly wrong? Relatively few issues of much importance are likely to be quite so simple. A consequence of this fact is that it is not often that one can prove his own argument right just by proving his opponent to be wrong. Your opponent may be wrong, and it is important to be able to show how he or she is wrong. But you should always recognize that in doing so you have not necessarily automatically proven your own argument to be true or valid.

k. Is the speaker or writer assuming that since a moderate amount of something is good or desirable, a lot of the same thing is even better? A reasonable degree of patriotism, for example, is expected of every person of good character; but in excess, patriotism can become the kind of fanaticism expressed in such slogans as "my country, right or wrong;" "if you're not for it, you're against it;" "love it or leave it;" and so forth. The right amount of pepper in your soup may improve its flavor, but an excess may make it inedible.

l. Is the speaker or writer assuming that a single counter-example can disprove a general claim of fact, e.g., that a single black sheep proves that all sheep aren't white? To the extent that this is true, it is only true in connection with rigorous systems of formal logic and semantics. But very little of our ordinary experience in life is of this nature. Taken all by itself, for example, the Watergate fiasco did not prove that Richard Nixon was a bad president, or even that he

was a dishonest man. Conversely, neither did his success in bringing about a rapprochement with China, all by itself, prove that Nixon was a great President.

m. Is the speaker or writer assuming that everyone always has a right to his or her own opinion and that one person's opinion is as good as another's? Obviously, not everything is a matter of opinion. And even in connection with matters of opinion, it is only in connection with matters of personal taste and preference that it makes much sense to say that everyone is entitled to his own opinion, and one person's is as good as another's. It makes little, if any sense, for example, to claim that everyone is entitled to his own opinion about the causes of cancer. And clearly, a physician's opinion about the proper treatment of cancer is better than that of the average tax accountant or plumber. What we value are expert, authoritative, or at least informed and reasoned opinions about most matters.

n. Is the speaker or writer taking figurative language too seriously or too literally? We use language figuratively when, for example, we say things like the following: "We will soon be able to build machines that think; after all, the human brain is only a very sophisticated computer;" "The universe is like a gigantic clock which is in the process of slowly winding down;" "Certainly, animals can learn language; haven't you ever heard a parrot talk?" What we forget in such cases is that while a parrot can be trained to utter the sounds "Polly wants a cracker," the parrot can't use those sounds to say, mean, or intend anything with them. It is nonsense, for example, to imagine a parrot, upon being offered a saltine, saying something like, "Don't be silly, you fool; I didn't mean that! Only a peasant eats saltine crackers. I wouldn't touch anything except bacon flavored Ritz crackers." A parrot can be trained to "talk" in the same sense in which a dog can be trained to "speak," i.e., to bark, for a bone. In both cases the words "talk" and "speak" are used figuratively. Similar analyses can be made of claims about "thinking machines" and "clockwork universes." If we assume for the sake of argument that such claims are true and then explore their logical implications, their figurative nature usually comes clear. This, of course, doesn't mean that it is incorrect to speak about talking parrots, but only that in this context "talking" means something different from what it means when we talk about people talking.

o. Is the speaker or writer assuming that because nouns are said to name persons, places, and things, all persons, places, and things are of the same logical types? The nouns "brain" and "mind" both name things, but the kinds of things they name are logically very

different from each other. We can't say the same kinds of things about minds that we can say about brains. We can talk meaningfully about brain tumors, but not about mind tumors. This, however, is not to say that talk about minds is vague, sloppy, imprecise, or unscientific. We know perfectly well, for example, what it means to say that we have changed our minds or that we have our minds made up about something. But, obviously, it is nonsense to say that we have changed our brains. Clearly the concept of a mind is not equivalent to the physical object that we call a brain, even though "mind" and "brain" are both nouns which name things.

Similar things can be said about nouns which name places and persons. New York and Sangri-La are both names of places about which meaningful things can be said, but no travel agent books flights to the latter. Davy Crockett and Paul Bunyan are the names of interesting people, but no genealogy includes the name of Paul Bunyan in its charts. Sometimes the status of such persons, places, and things can be highly relevant and important: sometimes it makes little or no difference. Whether or not Socrates and Homer were real people, for example, has very little to do with the excellence of their philosophy and poetry.

Parallel things can be said about verbs which are usually defined as words that identify actions. "Kicking" and "cutting" name physical actions which can be objectively verified, but "thinking," "admiring," "doubting," "praying," etc., name actions of logically different types. It makes no sense to talk about all action words as though they followed the same logical rules. For example, it makes sense to demand proof in a case where it is claimed that someone has kicked or cut, but not in cases where it is said that someone has admired or prayed. But this hardly implies that the verbs "admire" and "pray" have no real meaning.

p. Is the speaker or writer assuming that the speaker himself, or what he says, is exempt from the claim that the speaker makes? This problem is often encountered when a claim involves a grand, negative generality or theoretical claim of the following kinds: "You can't believe anything anyone tells you;" "Nothing makes any sense anymore;" "You can't trust anyone;" "All human knowledge is flawed and uncertain;" "Rules are made to be broken;" "Only that which can be verified can be said to be true;" "Human beings are incapable of understanding the real truth;" and so forth. Obviously, such statements apply to themselves and, so, cancel themselves out. Sometimes these kinds of claims are not easy to spot. For example, the claim that "Everyone must decide for himself what is right and wrong" is equivalent to the claim that "Statements which prescribe rules for the moral conduct of everyone are meaningless

or unjustifiable." The problem with this statement is that it is itself a general statement concerning moral rules and, therefore, impugns itself. People who argue in favor of "moral relativism" often point out that, in spite of the fact that most people pay lip service to the general moral rule that it is wrong for one person to kill another, most people do justify killing in self-defense, in war, and in various other situations. From such arguments they conclude that general moral rules are worthless and that each person must decide for himself or herself what is right and what is wrong. Such people fail to distinguish between the rule itself, on the one hand, and its application in particular circumstances, on the other hand. Without the general rule or public norm lying quietly in the background, no moral question about the rightness or wrongness of killing would even be raised by particular instances of killing. The issue would be reduced to one of personal taste or preference or, perhaps, group dogma or doctrine. Thus, we see that there is, indeed, a role to be played by individual judgement in assessing the morality of behavior; but such judgments are ordinarily concerned with the application of the moral rule, not with its legitimacy. But, even so, there has to be a certain consistency in our individual interpretations of the applications of a rule if the rule itself is to survive. A rule that is applied differently in every case is not a rule at all. Thus, a society in which everyone decided for himself or herself what was moral and immoral, or in which everyone agreed on the moral rules, but applied the rules very differently in their individual circumstances, would be, in effect, a society without morality. Morality in such a society would be like the Caucus Race in Alice in Wonderland. A race in which anyone can start and stop when he pleases, and do anything he likes in between, is a race in name only; it is not really a race at all.

In real life, as in a game, the player who insists upon being the sole judge of the correctness of his own moves is simply excluded from the game. Otherwise, the game itself disintegrates. Of course, not all rules are good rules, and some good rules eventually become obsolete and need to be changed. Therefore, a player is sometimes justified in protesting a rule and working to get the kind of agreement among the other players needed to change the rule. The main point to this example, however, is a logical one: the speaker or writer's grand generalities apply to himself and what he says as well as to others and what they say.

7. Remember that extraordinary claims require extraordinary proof. And the burden of proof lies with those making such claims. It is not your responsibility to prove that such claims are not true.

If you will follow the suggestions offered in this little guide, you can confidently expect a substantial improvement in your grades at school. But, more importantly, you will enjoy school more; you will feel better about yourself; and you will have taken a giant step in the direction of becoming a more mature, independent, and responsible adult.

FALLACIES

A fallacy is an error in reasoning. A fallacious argument is one which fails because the reasons or premises don't support the conclusion or claim which they are supposed to support. A fallacious argument, therefore, is a bogus or, at least, misleading argument. If fallacies were always easy to spot, there would be little point to discussing them. Everyone would immediately recognize faulty claims and simply ignore them. Because fallacious arguments can sometimes be quite persuasive, most people need practice in detecting them. Fallacies are sometimes committed inadvertently and sometimes quite deliberately. Propagandists, unscrupulous politicians, and advertisers regularly use fallacious arguments in their efforts to attract converts and voters, and to sell products.

Logicians sometimes distinguish between two broad classes of fallacies often identified as formal and informal fallacies. Formal fallacies arise from specific technical faults in certain forms of deductive logic. These are not discussed here. Much more frequently encountered are the informal fallacies, some of which are discussed in the following pages. The list of fallacies treated here is far from being complete, nor do all fallacies fall neatly into one or the other of the categories in any list. Often an argument will exhibit characteristics of two or more fallacies. For most people the important thing is not to be able to name and classify fallacies, but to be able to recognize bogus claims and arguments when they are encountered.

I. Fallacies of Relevance. The fallacies discussed under this heading are all characterized by a lack of relevance between conclusions and the reasons given in support of those conclusions. The conclusions don't follow logically from the reasons offered as justification for them.

A. Begging the Question. To argue is to give reasons in support of a claim or conclusion. When one inadvertently gives as a reason some form of the conclusion he is arguing for, he is arguing in a circle or begging the question. For example, "Mary lost the election for class president because she was unable to poll enough votes" is circular. Losing an election and not getting enough votes to win the election amount to the same thing. Simply repeating a statement neither explains nor gives good reasons for believing it; it only begs the question. Consider this example:

Teacher: "What makes you think you can handle my math analysis class?"

New Student: "Mrs. Smith, my trig teacher, recommended that I take it."

Teacher: "Why should I rely on her recommendation?"

New Student: "Believe me, she's the toughest math teacher in my old school."

Again the argument is circular. The teacher vouches for the student and the student vouches for the teacher. The question of the ability of the student to handle math analysis is begged.

B. Argument Against the Person. This fallacy involves an attack against the character or competence of one's opponent rather than against the merits of his or her argument or claim. The purpose is to discredit or weaken the argument of an opponent by questioning its source. Sometimes this technique is called "poisoning the well." By impugning the source of the argument, all that comes from that source is also impugned. Consider these examples: "Ronald Reagan is a mere television performer, not an expert in elementary and secondary education. Therefore, we can safely ignore his ideas about the latter." "As a former member of the Ku Klux Klan, what could Mr. Smith teach anyone about civil liberties?" Logically speaking, an argument stands by itself. The personality and character of the speaker are logically irrelevant to the merits of the argument.

C. Straw Man. When one interprets or misinterprets his opponent's argument in such a way as to make it easily vulnerable to attack or criticism, he commits the straw man fallacy. This often happens when someone has presented a fairly complex argument and his opponent reduces it to a simpler form, leaving out important elements, or when an argument is taken to an absurd extreme. The simpler form of the argument is then easier to refute than was the original. For example, public school teachers are sometimes accused of teaching a doctrine of "secular humanism." While it is true that public education is by law secular and by ancient and venerable tradition humanistic, and while there may exist certain formally organized clubs or societies which call themselves, e.g., the American Association of Secular Humanists, it does not follow that all or most or any teachers espouse in school a doctrine called secular humanism, even if some teachers belong to such formal organizations.

In their common meanings, the words "secular" and "humanism" do not, either separately or joined together, imply any particular doctrine. Anyone can, for his or her own purposes, stipulate any meaning for any word; but that hardly means that he or she has, thereby, changed the ordinary meaning of that word in the English language. The claim, then, that because what teachers teach is both secular and humanistic, they teach a particular set of beliefs called

"secular humanism" is, among other things, a straw man argument. It reduces a complex matter to a simple parody of the facts, and then attacks the parody rather than the real issue.

D. False Analogy. An analogy is a comparison between different sets of relationships. Analogies can be very helpful as a tool for explaining new or unfamiliar relationships by comparing them with relationships which are already familiar. The philosopher, Ludwig Wittgenstein, used an analogy between tools and words to show his idea of how words get their meaning. According to Wittgenstein, just as a carpenter uses different tools to do different kinds of jobs in carpentry, so all of us use different words to do different kinds of jobs in language, e.g., stating facts, telling jokes, thanking someone, apologizing, admiring a painting, praying, etc., are the different kinds of things we use words to do. By use of this and other analogies, Wittgenstein explained his view that the meaning of a word is to be seen in its use in our forms of life, and that we use language to do a great variety of different kinds of things other than merely stating facts. And just as no single one of the uses to which the carpenter puts his tools can be said to be more important to his trade than are the others, so, Wittgenstein says, none of the uses people make of language is more important than the others. Language which is used to state facts about the world is no more "meaningful" than is language which is used to admire a beautiful sunset or to express an attitude of reverence.

A good analogy, then, is a comparison of relationships which are alike in important ways; and it does not distort the facts. Compare Wittgenstein's analogy with this one: "Students who show disrespect for their teachers should be suspended from school. Can you imagine what would happen to an army in which the soldiers were allowed to show disrespect for their officers?" While few people would argue that students ought to be allowed to show disrespect for their teachers, fewer still would argue that the relationship between a student and his teachers is very similar to the relationship between a soldier and his officers. So the analogy is false and not very convincing. Here is another example of a false analogy. "Books are the food of the mind. Therefore, just as the Food and Drug Administration must investigate and approve consumer products before they can be sold to the public, so parents should censor the books that are placed in the school library for students to read." Again, a very loose and unconvincing analogy is made between things that are alike only in trivial ways. In general, analogies are more useful as tools of explanation than they are as supporting evidence or reasons in an argument.

E. Argument from Ignorance. This is a fallacy of arguing that something is true simply because it has never been shown to be false, or that something is false simply

because it has never been shown to be true. For example, it is fallacious to argue that there are such things as flying saucers simply because no one has been able to prove that they don't exist.

An exception to this rule exists in legal arguments where there is a guiding principle that a defendant is presumed to be innocent until proven to be guilty. The defense can, therefore, legitimately claim that if the prosecution hasn't proved the facts necessary to establish guilt, the court must conclude that the defendant is not guilty. But this is a special case based upon a stipulated legal principle.

In some other instances it can be safely assumed that if certain events had occurred, evidence of them could be discovered by qualified investigators. In such instances it is reasonable to take the absence of proof of their occurrence as proof of their non-occurrence. For example, if a competent team of forensic pathologists fails to find evidence of foul play in connection with the death of a chronically ill older person, we might well be justified in concluding that the deceased was not murdered.

F. False Cause. In general, this fallacy involves mistaking the cause of a given effect. In particular, it often involves the inference that one event is the cause of another simply because it occurred before the other. What actually constitutes a good argument for a casual connection between two events is not at all easily explained, but it is easy to see that the mere fact that one event precedes the other does not mean that the former caused the latter. Few people believe that accidents which occur shortly after a black cat crosses the path are caused by the presence of the cat. But students do sometimes attribute their bad grades in school to the fact that they have previously had personal difficulties with their teachers. And many people swear by certain non-prescription medicines just because their colds improved within a few days or weeks of taking such remedies.

G. Complex Question. A complex question is one which presupposes a definite answer to a prior question which has not even been asked. "Why did you cheat on the test?" presumes the prior question of "Did you cheat on your test?" Obviously, the only intelligent way to answer a complex question is to analyze it into its component parts. It may turn out that once the implied question is answered correctly, the explicit question simply dissolves. If, for example, the student did not cheat on the test, the question of why he cheated no longer makes sense. Other examples of the complex question are: "How long are we going to tolerate teacher interference with the administrative affairs of our school?" and "Is Congressman Kilroy still making a fool of himself?"

H. Irrelevant Conclusion. When an argument purporting to establish one conclusion is, in fact, directed toward proving a different conclusion, the fallacy of irrelevant conclusion is committed. Some conclusion is proved, but not the one under discussion. What actually gets proven is irrelevant or beside the point. For example, when a particular bill providing funds for "self-concept education" is under debate in the legislature, a legislator might rise to speak eloquently about the value of education and of the state's responsibility to provide education to its children. The legislator might even succeed in proving his conclusion. But when he tacitly equates the responsibility of the state to provide education with the conclusion that the state has a responsibility to provide something called "self-concept education," he commits the fallacy of irrelevant conclusion. He has proven something, but not what was at issue.

I. Accident. This fallacy involves relying upon a general rule in a special situation where "accidental" circumstances make the rule inapplicable. Consider the example of a student who, when asked why he had given test answers to a friend, cited the Golden Rule. Generally speaking, it is commendable to do unto others as you would have them do unto you. But a testing situation is a special case where that rule doesn't apply. A more serious example might be something like the following: a student who was suspended for dying his hair a different color each day or refusing to wear a shirt in school might claim that he was treated unjustly because the U.S. Constitution guarantees everyone a right to privacy and freedom of speech, including symbolic speech. While this argument would be strong in general and under ordinary circumstances, it fails to take into consideration the special circumstances of this particular case, namely, the necessity of operating an orderly educational process free from bizarre and unreasonable distractions. What is true generally may not be true always and without exception. When a general rule is appealed to in arguing a particular case whose features and circumstances prevent the general rule from applying, the argument is said to commit the fallacy of accident.

J. Hasty Generalization. If one considers only exceptional cases and generalizes on the basis of those alone, he commits the fallacy of hasty generalization. If a teacher develops a theory of student discipline based only on experiences with a few incorrigible youngsters, that theory may not hold water with respect to all students. In short, the fallacy of hasty generalization reflects the faulty assumption that if something is true for a few members of a group, then it is true for all members of the group without qualification.

K. False Dilemma. This fallacy consists of presenting a case as though there were fewer possible solutions to a

problem than is actually the case. Usually, two alternatives are offered in an "either/or" fashion. For example, suppose that a student is planning her schedule for the next year and wants to take Algebra II. But in talking to her counselor she is told: "I can't register you for Algebra II because your grade in Algebra I is lower than required. If you want to continue in math you either have to repeat Algebra I next year or choose a course in general or consumer math." Here the counselor has presented the student with what one would at least hope is a false dilemma by concluding that the student has only two choices, i.e., either to repeat Algebra I next year or settle for a non-academic math course. The reason given in support of this conclusion is that the student's grade in Algebra I was lower than required for admission to Algebra II. Such possible other alternatives, as repeating Algebra I in summer school or hiring a private tutor and challenging Algebra I are not considered, nor is the possibility that the low grade in Algebra I resulted from unavoidable school absences or some other excusable circumstance.

L. Appeal to Force. This fallacy involves the use of threats, intimidation, coercion, or force to cause acceptance of a conclusion. When a political lobbyist reminds a legislator or candidate that the lobbyist represents large numbers of voters or contributors to campaign funds in order to gain the support of the legislator or candidate, the lobbyist is resorting to the fallacy of the appeal to force. That is, the appeal of the lobbyist is logically unrelated to any substantive legislative or political issue. Nevertheless, such tactics can have profound effects in gaining support for or against such issues.

M. Appeal to Pity. This fallacy plays upon the emotions of the audience. When someone tries to get his conclusions or views accepted by arousing pity in his listeners, his argument is fallacious because he does not address the merits of his case: his appeal is not to reason, but to pity. "The teacher should not have failed Johnny, because Johnny is confined to a wheelchair and can hardly use his hands" would be an example of this fallacy. Pity, of course, has its place in human relationships, but it is logically irrelevant as a reason for accepting a conclusion in an argument.

N. Appeal to the People. This fallacy evades the real issue and attempts to rely upon popular or majority feelings about the issue. Typically it trades upon the prejudices, loyalties, and emotions of the public. It is sometimes called a "band-wagon" argument. An example of this type of fallacy might be: "The attempt of the Congress to ban private ownership of handguns is just another attempt by eastern politicians to impose their values upon our western way of life." The classic example of the appeal to the people

is the oration of Mark Antony at the funeral of Julius Caesar in Shakespear's play of that name. In this type of appeal there may be frequent references to God, country, flag, common decency, our way of life, the eastern intellectual establishment, over-educated fools, and so forth. In advertisements there are often attempts to establish associations between the product being advertised and some thing or idea which can be expected to command strong and widespread public approval or acceptance. For example, a certain beer might be associated with strong, masculine young men frolicking together on a beach; or a certain car might be pictured along with a number of scantily clad young ladies. The variations of this kind of fallacy are endless.

O. Appeal to Authority. An appeal to authority is not necessarily fallacious. A specific reference to an established authority in a specialized field of study in a way that is relevant to the matter at hand may carry great weight in an argument. The fallacy of appealing to authority involves an irrelevant appeal or an appeal to the wrong authority. An appeal to the Bible in a scientific argument or to the work of Darwin in a religious argument is fallacious. Somewhat different, but equally fallacious, are arguments which depend upon such vague claims as "science has proven" or "it's an established fact" that such and such is the case. The latter can also be seen as a type of begging the question or appeal to force since they avoid the real issue and attempt to intimidate the opponent rather than to argue the merits of the case. In the field of advertisement, the "testimonial" by a famous personality is a well-known example of the appeal to authority. Such testimonials ask one to believe that a certain statement is true on the basis of its being made by a famous person whose real expertise may lie in a different and unrelated field.

II. Fallacies of Ambiguity. The fallacies included under this heading are all characterized by some kind of vagueness or lack of preciseness of meaning or reference. This lack of clarity can arise in different ways.

A. Equivocation. This fallacy involves the use of a single term with different meanings at different places in the argument. For example:

Man is the only rational being.
No woman is a man.
Therefore, no woman is a rational being.

Here the word "man" is used in two different senses. In the first statement it is used as a generic term meaning something like "human beings." In the second statement it is used to indicate the male sex. Clearly, women are human beings, but not members of the male sex. So, the absurd conclusion of this fallacious argument results from the ambiguity or shift in meaning of the word "man."

Consider another example.

All canaries are birds.
Tweety is a large canary.
Therefore, Tweety is a large bird.

In this example the word "large" is used ambiguously. It is a relative term that means different things in different contexts. A large canary is still a small bird, just as a small ostrich is still a large bird. If we substitute the word "tame" for "large" in this example, we produce a valid argument, because "tame" divides the category of birds in more or less the same way that it divides the category of canaries. Many serious logical difficulties can arise from these kinds of shifts in word meaning.

B. Amphiboly. Poor grammatical structure is sometimes a source of ambiguity in statements. Often such statements can be understood in two different ways and are true according to one interpretation and false according to the other. An example of this kind of statement is shown in this argument: "That Johnny is basically an honest student is shown by the fact that he confessed to the police his part in the vandalism with the full support of his parents and principal."

The classic example of amphiboly is the advice given to King Croesus by the Oracle of Delphi. Croesus, king of Lydia, sought the advice of the oracle concerning his intention to declare war against Persia. The Oracle told Croesus that if he did go to war he would destroy a great empire. So Croesus went to war and, in fact, did destroy a great empire--his own. The fallacy of amphiboly occurs when someone draws the wrong conclusion because of the wrong interpretation of an amphibolous statement.

C. Accent. The fallacy of accent occurs when someone draws a wrong conclusion based upon a shift in word emphasis or accent. Notice how the meaning of the following sentence changes depending upon which word is stressed. Johnny didn't steal his English teacher's grade book. A variation of this fallacy involves the use of quotations without due regard for the context from which the quotation was taken. Suppose, for example, that a certain teacher were quoted as having said that his principal was incompetent. It might make a big difference when and where he said it. Did he say it this year in this school, or last year in another school where he worked and where the principal was, in fact, dismissed on a charge of incompetence? In making direct quotations, responsible writers and speakers always make clear the context from which the quotation is taken. If the quotation is made in writing and contains italicized words, responsible writers always make clear whether or not those words were stressed in the original. Similarly, if words are omitted from the original, the omission should be indicated by

elipsis dots; and if words are added, they should be enclosed in brackets.

D. Composition. This fallacy consists in attributing to a group or entity as a whole the characteristics or properties possessed by each of its members or parts. For example, it is fallacious to assume that just because each player on an all-star team is a champion in his own right, the team itself will be a great team. Likewise, one can't assume that because every brick in a building is rectangular, the building itself will have a rectangular shape. The whole may be something different from the simple sum of its parts.

E. Division. This fallacy is the opposite of the fallacy of composition. The fallacy of division involves the assumption that if a group or entity has a certain property or characteristic, then each part or member of that group or entity will also have that property or characteristic. The fact that a certain school chorus has been ranked as the top one in the state does not guarantee that each and every singer in that chorus is the best of his or her kind in the state. The best marching band in the state may have among its members one or more quite mediocre musicians.

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